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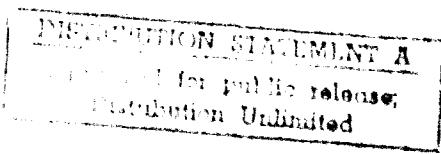
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SEATTLE, WASHINGTON

FINAL REPORT
LEADERSHIP PERFORMANCE IN
COMPLEX ORGANIZATIONS

Fred E. Fiedler
Principal Investigator

September 1976



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and Advanced Research Projects Agency

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| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The culmination of our research under this contract is the development and validation of a leadership training program, LEADER MATCH, based on this theory. Since the background research has been published this report will focus on the LEADER MATCH program and its application to the military services. During the term of this contract, 48 technical reports have been completed of which 33 have been published to date in scientific journals which describe the empirical research and related work leading up to the training program. | | |

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FINAL REPORT
LEADERSHIP PERFORMANCE IN COMPLEX ORGANIZATIONS

Office of Naval Research Contract NR 177-472 (Nonr 1234 (36), No. N00014-67-A-0103-0012 was begun September 1, 1969 and continued through August 31, 1975 with a no-cost extension until June 30, 1976. In 1971, ARPA Order No. 454, Contract N00014-67-A-0103-0013 from the Advanced Research Projects Agency was merged with the ONR Contract to provide additional funding. The contract was established for the purpose of extending a program of research on leadership and organizational performance based on the Contingency Model of Leadership Effectiveness (Fiedler, 1964, 1967). This theory postulates that effective performance is the result of an interaction between the leader's personality (leadership style) and his control over his leadership situation (situational favorableness).

The culmination of our research under this contract is the development and validation of a leadership training program, LEADER MATCH, based on this theory. Since the background research has been published this report will focus on the LEADER MATCH program and its application to the military services. During the term of this contract, 48 technical reports have been completed of which 33 have published to date in scientific journals which describe the empirical research and related work leading up to the training program which has been completed. A complete list of all publications resulting from this project is included in Appendix A.

· LEADER MATCH

General Description of the Program

The LEADER MATCH training is presented in the form of a self-administered programmed workbook which the trainee can complete on his own time and which can be augmented by lectures, discussion, or films. Reading and

responding to the book takes from four to eight hours, depending on the individual's reading speed and past knowledge, as well as the care with which he reviews the material.

Each chapter of the workbook consists of a short essay which explains the basic concepts of the Contingency Model and its application. The essays are followed by several short problems, case studies, or leadership episodes (probes) for which the trainee selects the best answer. He is then given feedback on the correct response. An incorrect response requires him to review the chapter and try the probe again in order to assure that he completely understands the material. Each chapter closes with a short summary. There are two review sections and several short tests. A final LEADER MATCH test enables the trainee to measure how well he has understood the training and helps him determine any special problem areas which might need additional review.

Outline of the Manual

The first chapter in the manual requires the trainee to complete the Least Preferred Coworker (LPC) scale. This scale identifies the trainee's leadership style. The scale consists of 18 bi-polar adjectives of the semantic differential format, for example:

Pleasant : 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Unpleasant

Cooperative : 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Uncooperative

To complete the scale, the trainee is instructed to think of all the people he has ever worked with and then to describe the one person with whom he could work least well. The sum of the item scores expresses his LPC score.

A high score indicates that the person is relationship-motivated, i.e., his primary goal or motivation in the leadership setting is to have good interpersonal relations with co-workers and through these good relations to accomplish the task. He gains self-esteem from the good will of those who work with him.

A low score indicates that the trainee is task-motivated, i.e., his primary goal or motivation is to accomplish successfully any task to which he is assigned. He gains self-esteem from his feeling of accomplishment and will endeavor to complete the task even to the extent of sacrificing good relations with coworkers. Both types of leaders, however, are equally well liked and both are effective when placed in the right situation.

The next four chapters in the training manual are devoted to measuring the situational favorableness of the trainee's job. The three dimensions which determine the degree of situational favorableness are : (1) leader-member relations, the degree to which the group supports the leader; (2) task structure, the degree to which the task is clearly defined and guidelines have been established; and (3) position power, the amount of authority the leader has to reward and discipline his subordinates.

The weighted scales enable the trainee to obtain a numerical score which reflects whether his leadership situation is highly favorable, moderately favorable, or unfavorable.

1. Favorable--situations are defined as those in which the leader has the support of his group (good leader-member relations), a highly structured task, and high position power.

2. Moderately Favorable--Here the leader has the support of his group but an unstructured task and low position power, or low group support and high task structure and high position power.

3. Unfavorable--In these situations the leader does not have the support of his group, his task is unstructured and his position power is low or the situation is stressful. Some leaders find situations of this type challenging and interesting.

Our research has shown that the task-motivated (low LPC leader performs best in the favorable and unfavorable situations, while the relationship-motivated (high LPC) leader performs best in the moderately favorable situation.

The final chapters provide instructions on modifying or "engineering" the leadership situation to fit the individual's personal style. Because the leadership situation is a dynamic, changing environment, the trainee also learns how to maintain the correct match for his leadership style and how to take into account the effects of training and increased experience on the job. Finally, the trainee is taught how to apply the program to the leadership situations of his subordinate leaders in order to assist them in attaining better performance. Attention is also given to the effects of rotation and transfer and selection and placement of personnel.

Validation of LEADER MATCH

Eight validation studies have now been completed using LEADER MATCH. Four of these studies were conducted with civilian organizations and four were conducted with military personnel.

Validation Studies in Civilian Organizations

The subjects for the four civilian studies included: (a) volunteers of a public health agency, (b) middle-managers of a county government, (c) police sergeants, and (d) public works supervisors and managers. In each study, a list of people who were considered eligible for training was

obtained (as well as expected to remain in the position for sufficient time to evaluate the effects of training). From this list, subjects were randomly assigned to either the trained condition or a control condition.

In the first study, trainees were sent the LEADER MATCH manual by mail and asked to return the completed book. The trainees in the second and third study attended two-four-hour training sessions in which they read portions of the book and viewed the Contingency Model film, Leadership: Style or Circumstance (CRI, 1974), and were provided an opportunity to discuss the material. The manuals were to be completed and returned to the investigators. Because of the attrition involved in these studies due to vacation schedules, heavy work loads, illness, etc. the fourth study was conducted during working hours under the supervision of the investigators.

Performance Criterion. Performance evaluations were obtained from superiors 2 to 4 months after training. In the last study, a performance evaluation by at least 2 superiors was also obtained for both the control and training groups prior to training and again after 2-4 months using the organization's regular performance rating form.

Results. In all four studies, trained leaders performed better than untrained leaders with 30% of the performance criteria in the predicted direction and 33% significantly so. Details of these studies can be found in Technical Report 75-70 (Fiedler, Laihar and Schmidt, 1976).

Validation Studies in Military Organizations

Study 1. Subjects in this study were 38 junior officers and chief petty officers from eight Naval Air Squadrons at Whidbey Island Naval Air Station. One half the officer sample and one half of the petty officer sample were assigned randomly to a training group which received the LEADER

MATCH program with the other half serving as controls. The subjects in both groups completed biographical data sheets, a questionnaire, and a short intelligence test to insure that the groups were as similar as possible. The training group then underwent three four-hour training sessions during which they read LEADER MATCH, discussed the material, and viewed the Contingency Model film (CRII, 1975).

Performance Criterion. Performance ratings were completed prior to training for each subject by three of his or her immediate supervisors. The identical ratings were obtained six months later from at least two of the same supervisors.

Results. As can be seen in Figure 1, the mean performance scores of the experimental group increased while those of the control group did not. Results also indicated that the trained group improved in ratings of task performance at the .02 level and in overall ratings at the .06 level. No differences were found in the effectiveness of the training program for petty officers and for officers or for less intelligent and more intelligent trainees. (See Leister, Borden and Fiedler, Technical Report 76-81, 1976.)

Study 2. Subjects for a second study of naval personnel were junior officers and chief petty officers of a Navy destroyer. From a list of 32 "eligible" personnel (those who would not be reassigned within 3-5 months of training), we matched leaders according to rank and randomly assigned 10 to the training condition and 10 to the control group. Attrition was limited to one subject from the control group who was reassigned to another ship shortly after the study began.

LEADER MATCH training was administered in two four-hour sessions. Trainees viewed the Contingency Model film and participated in a discussion of the program. Again, a brief questionnaire was administered to both

groups. Identical performance ratings were obtained at the time of training from two of the subjects' immediate supervisors and again six months later.

Results. As Figure 2 shows, the mean performance scores of the experimental group increased while those of the control group decreased. The performance ratings were then converted to standardized z-scores and a change score analysis was performed. The results indicated the increase in performance for the trained group was significant at the .01 level (1-tailed). The decrease in ratings for the control group is likely to reflect that their performance seemed poorer in comparison at the end of the six month period.

(Financial support for these two military studies was also provided by the Chief of Naval Education and Training, Pensacola, Florida. An additional study supported entirely by CNET is still in progress.)

Studies 3 and 4. The two military studies were conducted independently by LTC. Paul Bons and Major Louis Csoka. Their first study used officer trainees who were scheduled to become acting platoon leaders in operational units during the summer. One third of 154 men were randomly selected for LEADER MATCH training while the others were used as controls. At the end of the test period, the unit's officer evaluations showed that the men with LEADER MATCH training were rated by their superior officers as performing significantly better than untrained men assigned to the same unit.

The second study by Bons and Csoka involved 27 training companies, each with three platoon leaders. One of the platoon leaders in each company was randomly selected for LEADER MATCH training. At the end of a four-month period, the customary evaluation of all platoon leaders showed that the trained leaders were significantly more often chosen as the best of the three in their company.

To summarize, eight validation studies have been completed and all eight indicate that the subjects trained with LEADER MATCH outperform those in the untrained groups. These results provide strong support for the effectiveness of the LEADER MATCH training program as well as the basic validity of the theory which has been developed under ONR contracts.

Application of LEADER MATCH to the military

A military version of this program has been completed in draft form. It was rewritten to reflect military terminology and Navy and Marine Corps leadership problems. This new version has not been field tested, but because of its similarity to the validated version of LEADER MATCH, we have every reason to believe that it will be at least as effective. We are able to recommend at this time that LEADER MATCH should be included as a part of military leadership effectiveness training. One copy of the original and one copy of the draft of the military version have been provided to ONR and ARPA.

Figure 1.
Mean Performance Ratings for
trained and untrained leaders

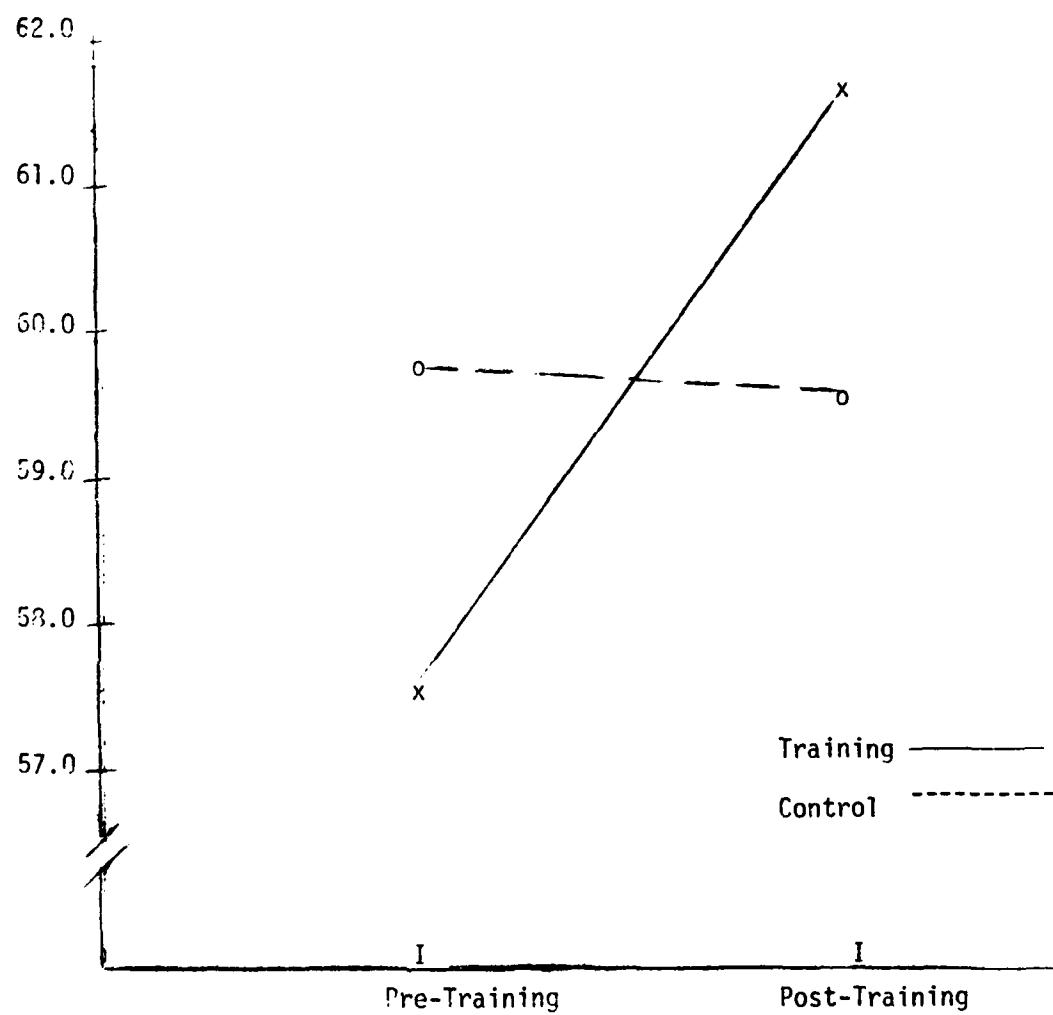
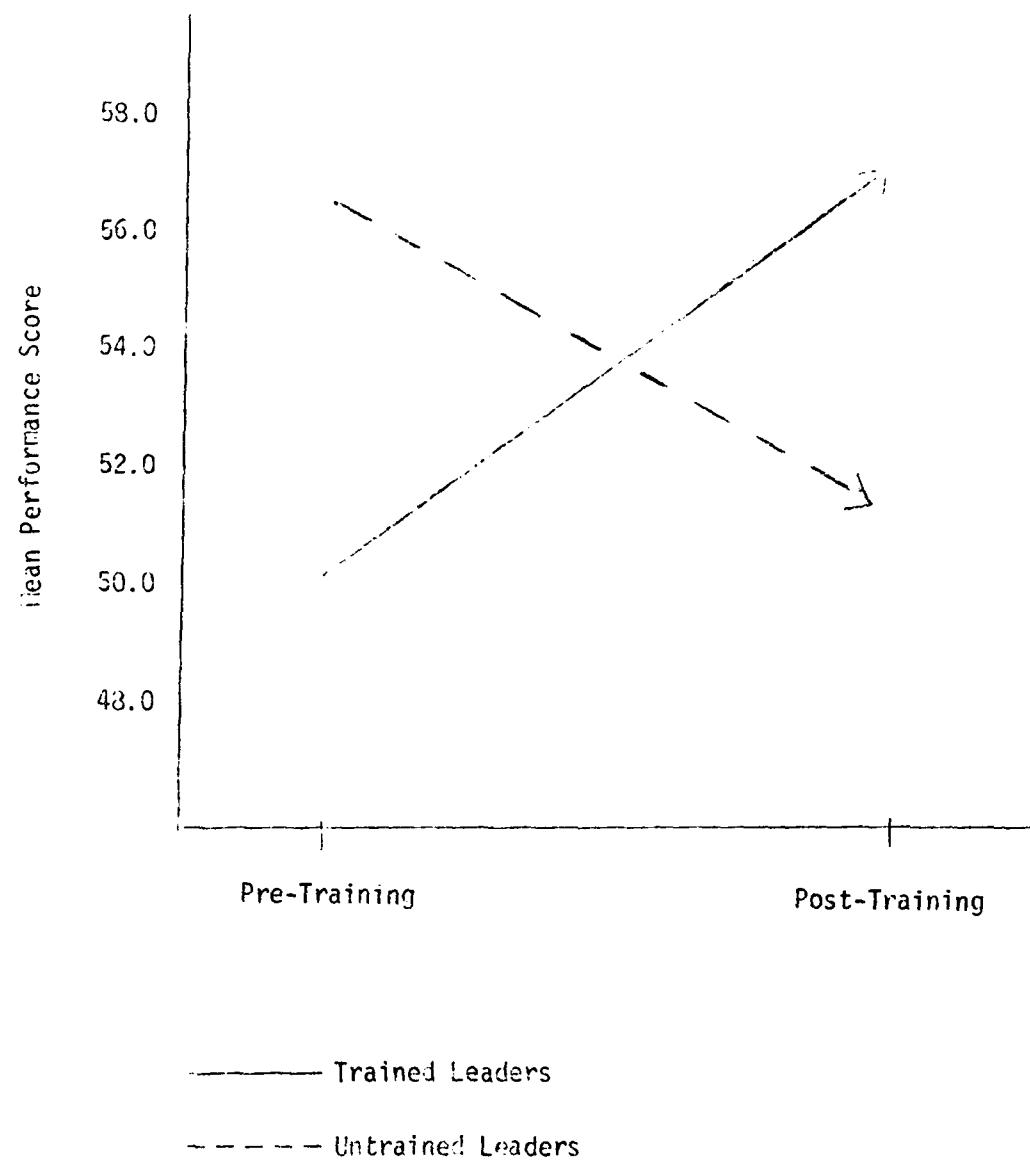


Figure 2.
Mean Performance of Trained and Untrained
Leaders from a Navy Ship



COPIES OF THESE REPORTS ARE AVAILABLE ON REQUEST.

APPENDIX A

Publications

Technical Reports

| <u>Technical Report Number</u> | <u>Author, Title, and Publication Data</u> |
|--------------------------------|--|
| 70-2 | Smith, R., & Fiedler, F. E. The measurement of scholarly work in academic institutions: A review of the literature. <u>Educational Record</u> , 1971, Summer. |
| 70-3 | Mitchell, T. R. Leader complexity and leadership style. <u>Journal of Personality and Social Psychology</u> , 1970, <u>16</u> , 166-172. |
| 70-4 | Fiedler, F. E. Validation and extension of the Contingency Model: A review of empirical findings. <u>Psychological Bulletin</u> , 1971, <u>76</u> , 128-148. |
| 70-5 | Fiedler, F. E., Mitchell, T. R., & Triandis, H. C. The culture assimilator: An approach to cross-cultural training. <u>Journal of Applied Psychology</u> , 1971, <u>55</u> , 95-102. |
| 70-7 | Foa, U. G., Mitchell, T. R., & Fiedler, F. E. Differentiation matching. <u>Behavioral Sciences</u> , 1971, <u>16</u> , 130-142. |
| 70-8 | Posthuma, A. B. Normative data on the LPC and GA questionnaires. |
| 70-9 | Fishbein, M., Ajzen, I., Landy, E. S., & Anderson, L. R. Attitudinal variables and behavior: Three empirical studies and a theoretical reanalysis. |
| 70-10 | Mitchell, T. R., & Biglan, A. Instrumentality theories: Current uses in psychology. <u>Psychological Bulletin</u> , 1971, <u>76</u> , 432-454. |
| 70-11 | Mitchell, T. R., Biglan, A., Oncken, G. R., & Fiedler, F. E. The Contingency Model: Criticisms and suggestions. <u>Academy of Management Journal</u> , September, 1970. |
| 70-12 | Fiedler, F. E. Personality, motivational systems, and behavior of high and low LPC persons. <u>Human Relations</u> , 1972, <u>25</u> , 391-412. |
| 70-13 | Morcheil, S., & Mitchell, T. R. An evaluation of the effectiveness of the Thai and Greek culture assimilators. <u>Journal of Applied Psychology</u> , 1972, <u>56</u> , 472-479. |

Technical Reports (Continued)

(2)

| <u>Technical Report Number</u> | <u>Author, Title, and Publication Data</u> |
|--------------------------------|--|
| 70-14 | Mitchell, T. R. Cognitive complexity and group performance. <u>Journal of Social Psychology</u> , 1972, <u>86</u> , 35-43. |
| 70-15 | Wearing, A., & Bishop, D. W. The Contingency Model and the functioning of military squads. |
| 70-16 | Fiedler, F. E. On the death and transfiguration of leadership training (Published as "Predicting the effects of leadership training and experience from the Contingency model.") <u>Journal of Applied Psychology</u> , 1972, <u>55</u> , 114-119. |
| 71-17 | Mitchell, T. R., & Albright, D. Expectancy Theory predictions of job satisfaction, job effort, job performance, and retention of Naval aviation officers. <u>Organizational Behavior and Human Performance</u> , 1972, <u>8</u> , 1-20. |
| 71-18 | Fiedler, F. E. Personality and situational determinants of leader behavior. Published in the <u>Proceedings of the Contemporary Development in Leadership Symposium</u> , Southern Illinois University, 1973. |
| 71-19 | Mitchell, T. R. Instrumentality theories: Conceptual and methodological problems. Published in the <u>Journal Supplement Abstract Service</u> . |
| 71-21 | Csoka, L. S., & Fiedler, F. E. The effect of leadership experience and training in structured military tasks: A test of the Contingency Model. <u>Organizational Behavior and Human Performance</u> , 1972, <u>8</u> , 395-407. |
| 71-22 | Hewett, T., & O'Brien, G. E. The effects of work organization, leadership style, and member compatibility upon small group productivity. <u>Organizational Behavior and Human Performance</u> , 1974, <u>11</u> , 293-301. |
| 71-25 | Pollard, W. E., & Mitchell, T. R. A Decision Theory analysis of social power. <u>Psychological Bulletin</u> , 1972, <u>78</u> , 433-440. |
| 71-27 | Mitchell, T. R., & Knudsen, B. W. Instrumentality Theory predictions of students' attitudes towards business and their choice of business as an occupation. <u>Journal of the Academy of Management</u> , 1973, <u>16</u> , 41-52. |

Technical Reports (Continued)

(3)

| <u>Technical Report Number</u> | <u>Author, Title, and Publication Data</u> |
|--------------------------------|---|
| 71-28 | Mitchell, T. R., Possett, D. L., Fiedler, F. E., & Triandis, H. C. Culture training: Validation evidence for the culture assimilator. <u>International Journal of Psychology</u> , 1972, <u>7</u> , 97-104. |
| 71-29 | Mitchell, T. R., & Nebecker, D. H. Expectancy Theory predictions of academic performance and satisfaction. <u>Journal of Applied Psychology</u> , 1973, <u>57</u> , 61-67. |
| 71-30 | Mitchell, T. R., & Pollard, W. E. Instrumentality Theory predictions of academic behavior. <u>Journal of Social Psychology</u> , 1973, <u>89</u> , 35-45. |
| 72-32 | Csoka, L. S. A validation of the Contingency Model approach to leadership experience and training. Paper presented at the Western Psychological Association Meeting, April 1972. |
| 72-34 | Csoka, L. S. Intelligence: A critical variable for leadership experience (new Title: A relationship between leader intelligence and leader effectiveness). <u>Journal of Applied Psychology</u> , 1974, <u>59</u> , 43-47. |
| 72-36 | Fiedler, F. E. Leadership experience and leadership training: Some new answers to an old problem. <u>Administrative Science Quarterly</u> , 1972, <u>17</u> , 453-470. |
| 72-37 | Nebecker, D. H., & Hansson, R. Confidence in human nature and leadership style. Paper presented at the Western Psychological Association Meeting, April 1972. |
| 73-39 | Hansson, R., & Fiedler, F. E. Perceived similarity, personality and attraction to large organizations. <u>Journal of Applied Social Psychology</u> , 1973, <u>3</u> , 258-266. |
| 73-40 | Blades, J. H., & Fiedler, F. E. Participative management, member intelligence, and group performance. |
| 73-41 | Csoka, L. S. Organic and mechanistic organizational climates and the Contingency Model. <u>Journal of Applied Psychology</u> , 1975, <u>60</u> , 273-277. |
| 73-42 | Chemers, M. M., Rice, R. H., Sundstrom, E., & Butler, W. M. Leader esteem for the Least Preferred Co-worker score, training, and effectiveness: An experimental examination. <u>Journal of Personality and Social Psychology</u> , 1975, <u>31</u> , 401-409. |

Technical Reports (Continued)

(1)

| <u>Technical Report Number</u> | <u>Author, Title, and Publication Data</u> |
|--------------------------------|---|
| 73-44 | Nebeker, D. M., & Mitchell, T. R. Leader behavior: An Expectancy Theory approach. <u>Organizational Behavior and Human Performance</u> , 1974, <u>11</u> , 355-367. |
| 73-48 | Nebeker, D. M. Situational favorability and environmental uncertainty: An integrative study. <u>Administrative Science Quarterly</u> , 1975, <u>20</u> , 281-294. |
| 73-49 | Mitchell, T. R. Motivation and Participation: An integration. <u>Academy of Management Journal</u> , 1973, <u>16</u> , 670-679. |
| 73-50 | Fiedler, F. E. Toward a comprehensive system of leadership utilization. |
| 74-55 | Green, S. G., Nebeker, D. M., & Boni, M. A. Personality and situational effects on leader behavior. <u>Academy of Management Journal</u> , 1976, <u>19</u> , 184-194. |
| 74-59 | Prothero, J., & Fiedler, F. E. The effect of situational change on individual behavior and performance: An extension of the Contingency Model. |
| 74-61 | Nebeker, D. M., Beach, L. R., & Green, S. G. Situational favorability and the perception of uncertainty: An experimental demonstration. |
| 74-62 | Green, S. G., & Nebeker, D. M. Leader behavior: Autonomous or interactive. |
| 75-63 | Bons, P. M., & Fiedler, F. E. The effect of changes in command environment on the behavior of relationship- and task-motivated leaders. <u>Administrative Science Quarterly</u> , In press. |
| 75-64 | Ochman, I., & Fiedler, F. E. The effects of situational favorableness on leader and member perceptions of leader behavior. |
| 75-66 | Beach, L. R., Mitchell, T. R., & Beach, B. H. Components of situational favorableness and probability of success. |
| 75-70 | Fiedler, F. E., Schmidt, D. E., & Maher L. Four validation studies of contingency model leadership training. |
| 75-72 | Mc-Dalton, R. The influence of training and position power on leader behavior. |

Technical Reports (Continued)

(5)

| <u>Technical Report Number</u> | <u>Author, Title, and Publication Data</u> |
|--------------------------------|--|
| 75-74 | Beach, B. H., & Lawrence, S. J. Data on a set of twenty-seven scenarios for experiments involving judgments of situational favorableness. |
| 76-78 | Blades, J. W., & Fiedler, F. E. The influence of intelligence, task ability, and motivation on group performance. |
| 76-81 | Leister, A. F., Borden, D. F., & Fiedler, F. E. The effect of contingency model leadership training on the performance of Navy leaders. |
| 70-1 | O'Brien, G. E., Fiedler, F. E., & Hewett, T. The effect of programmed culture training in Central America. <u>Human Relations</u> , 1971, 24, 209-231. |
| 70-6 | Stewart, T. R. Individual differences in cognitive interaction. |

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Other Publications (Continued)

(6)

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Fiedler, F. E. New concepts for the management of managers. In Man and Work in Society, Eugene Cass and Frederick Zimmer (Eds.), New York: Van Nostrand Reinhold Company, 1975, 207-220.

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Fiedler, F. E., Chemers, M. M., & Maher, L. L. Leader Match, Second Experimental Version. Seattle: Department of Psychology, University of Washington, 1976.

APPENDIX B

Personnel 1969-1976

| <u>Faculty</u> | <u>Research Assistants</u> | <u>Staff</u> |
|------------------|----------------------------|----------------------|
| Gerald Oncken | Robert Hansson | Linda Hastings Nahar |
| Anthony Biglan | Delbert Nebeker | Judy Caples |
| Terence Mitchell | Richard Smith | Sue Baker |
| Cecil Gibbs | Allen Posthuma | Peggy Burnside |
| Martin Chimers | Patrick Thulberger* | Janet Lampe |
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| | Allen Boni | Nancy Denton |
| | Linda Rice | Kevin Robinson |
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| | Paul Bons* | |
| | Dave Taylor* | |
| | Don Borden* | |
| | Al Leister* | |

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